

MPA 401 Series

Mini Power Amplifiers



Extron® Electronics
INTERFACING, SWITCHING AND CONTROL

Precautions

Safety Instructions • English



This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.



This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français



Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).



Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions • Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conservier les instructions • Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch



Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.



Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits- und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español



Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.



Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

安全须知 • 中文



这个符号提示用户该设备用户手册中有重要的操作和维护说明。



这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the instructions of the manufacturer.

Avertissement

Alimentations • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation • Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un ype équivalent recommandé par le constructeur. Mettre au reut les batteries usagées conformément aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden.

Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stromversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

警告

电源 • 该设备只能使用产品上标明的电源。设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线，避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用什么东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class B Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.

For more information on safety guidelines, regulatory compliances, EMI/EMF compliance, accessibility, and related topics, [click here](#).

Notational Conventions Used in this Guide

TIP: A tip provides a suggestion to make setting up or working with the device easier.

NOTE: A note draws attention to important information.

CAUTION: A caution warns of things or actions that might damage the equipment.

WARNING: A warning warns of things or actions that might cause injury, death, or other severe consequences.

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Introduction

This guide contains information about the Extron MPA 401-70V and MPA 401-100V mini power amplifiers with instructions for experienced installers on how to install, configure, and operate the equipment. Unless otherwise specified, references in this guide to the "amplifier," "MPA," or "MPA 401" relate to the features or operation of either amplifier.

MPA 401-70V and MPA 401-100V Description

The Extron MPA 401-70V and MPA 401-100V integrated mini power amplifiers provide mono amplification for speaker systems that require compact and economical audio solutions. Both amplifiers accept balanced or unbalanced, stereo or mono inputs and provide a summed mono output. The MPA 401-70V delivers up to 40 watts (rms) for a high-impedance, 70 V distributed sound system. The MPA 401-100V delivers up to 40 watts (rms) for a high-impedance, 100 V distributed sound system.

Front panel controls allow easy adjustment of bass, treble, and input levels. Volume can be controlled remotely by the Extron VCM 100, VC 50, or MLA VC 10.

Both amplifiers feature high efficiency, Class D amplifier design with advanced CDRS™ (Class D Ripple Suppression) technology that eliminates EMI emissions and interference with sensitive A/V equipment. The design allows the amplifiers to be fanless and operate in environments with little or no ventilation. Both amplifiers meet UL 2043 for smoke and fire code for above-the-ceiling installations.

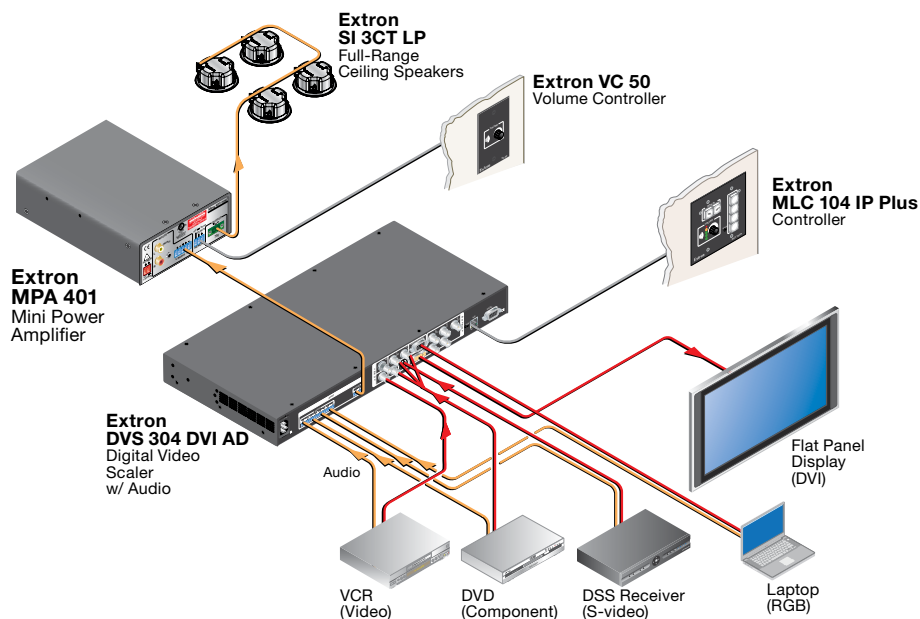


Figure 1. Typical Application for the MPA 401

MPA 401-70V and MPA 401-100V Features

Patented CDRS (Class D Ripple Suppression) — CDRS is an Extron patented technology that eliminates high frequency switching ripple and EMI emissions found in all Class D amplifiers. CDRS dramatically improves audio performance over conventional Class D amplifier designs and enables Extron power amplifiers to be situated near wireless A/V devices without RF interference.

UL 2043 plenum rated — The amplifiers meet UL 2043 for smoke and heat release for installation within a plenum airspace above a drop ceiling. Above-the-ceiling placement conceals the amplifier to prevent theft and is convenient for installing equipment when space inside the room is limited.

Balanced and unbalanced buffered audio inputs — Both amplifiers accept balanced or unbalanced, stereo or mono audio input signals on a captive screw connector, and unbalanced audio on both RCA connectors and a 3.5 mm stereo mini jack.

NOTE: The amplifiers mix all right channel inputs to a single signal and all left channel inputs to a second signal. The right signal and left signal are then summed to produce a mono signal.

The three stereo inputs are individually buffered and can be connected to three separate sources at the same time without altering performance.

Quick-plug speaker outputs — Speaker output is on a 5 mm screw lock captive screw connector for quick installation.

ENERGY STAR® qualified amplifier — The MPA 401-70V and MPA 401-100V amplifiers are ENERGY STAR qualified amplifier and energy efficient products that conserve energy and reduce costs.

Auto-standby with fast power up — automatically places the amplifiers into standby after 25 minutes of inactivity. They quickly return to full power status in less than one second upon signal detection. The amplifiers consume just 6 watts when idle and less than 1 watt in standby mode.

Front panel bass, treble, and input level controls — Bass, treble, and input level are easily adjusted from the front panel.

Fanless design — The amplifiers do not require fans or vents for cooling, ensuring quiet, reliable operation.

Automatic clip limiter — Detects actual onset of clipping by comparing input and output waveforms. Gain is automatically reduced with a slow attack and fast release to eliminate clipping. This advanced limiter design protects the speakers from clipping distortion and offers superior sonic characteristics compared to limiters that use signal compression.

Remote volume and mute control port — A rear panel, three-pin captive screw remote input connector allows remote adjustment of volume and muting. In basic installations without third-party control systems, this port allows the amplifiers to be remotely controlled using the optional Extron VCM 100 series analog volume and mute controller or VC 50 analog volume controller.

Compact size — The 1U, quarter rack width, 6 inch deep metal enclosure, offers flexible mounting options.

Rear Panel and Cabling

This section describes the rear panel features and cabling of the MPA 401-70V and MPA 401-100V.

- [Rear Panel Cabling](#)
- [Power Input](#)
- [Audio Inputs](#)
- [Remote Input Connector](#)
- [Speaker Connections](#)

Rear Panel Cabling

The illustration below shows the rear panel of the amplifiers:

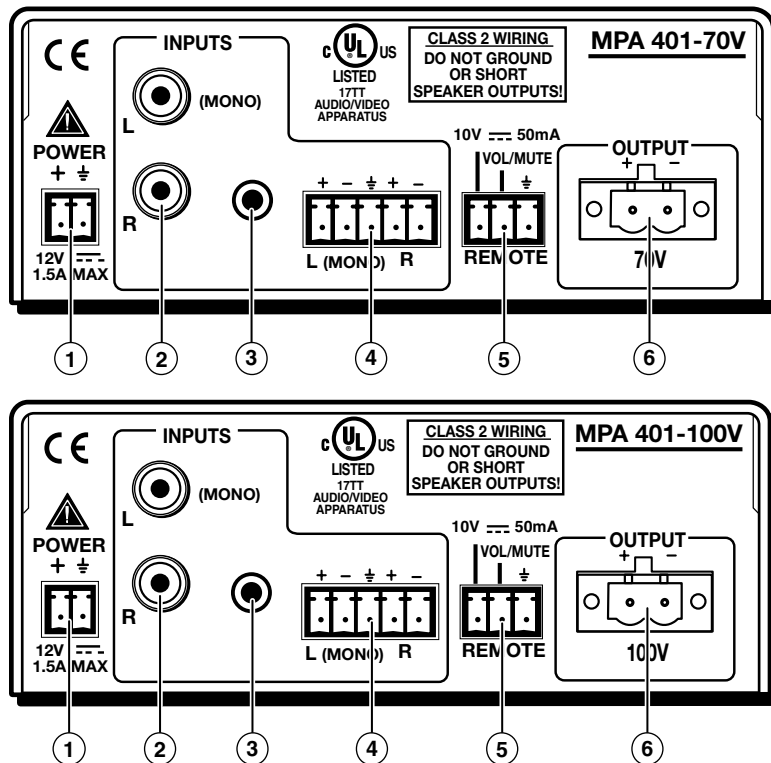


Figure 2. MPA 401-70V and MPA 401-100V Rear Panel Features

Power Input

- ① **Power connector** — The MPA 401-100V ships with an Extron 36 W desktop power supply (PS 1230 [part number **70-769-01**]). The MPA 401-70V ships with either the Extron 36 W desktop power supply or the Extron 12 VDC, 5 A power supply (EPS 1250 C [part number **70-725-01**]).

When using the EPS 1250 C power supply, connect the two pole, 3.5 mm captive screw connector from the power supply to the power socket on the rear panel of the MPA 401-70V, as shown below in figure 3. Ensure the connections have the correct polarity as shown.

CAUTION: Always use a power supply supplied or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.

Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The power supply is to be located within the same vicinity as the Extron A/V processing equipment in an ordinary location, Pollution Degree 2, secured to the equipment rack within the dedicated closet, podium or desk.

The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 75 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to building structure or similar structure.

NOTES: The length of the exposed wires in the stripping process is critical. The ideal length is 3/16 inches (5 mm). Any longer and the exposed wires may touch, causing a short circuit between them. Any shorter and the wires can be easily pulled out even if tightly fastened by the captive screws.

Do not tin the wires. Tinned wire does not hold its shape and can become loose over time.

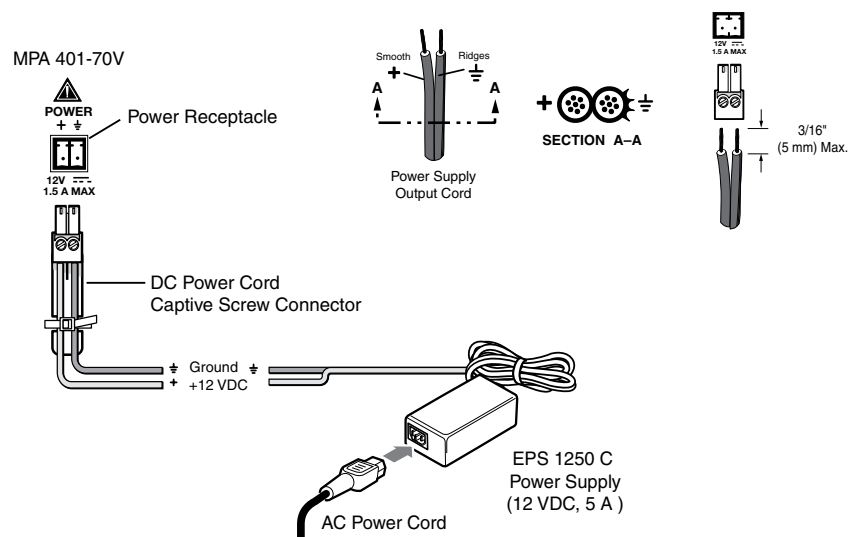


Figure 3. Connecting the EPS 1250 C Power Supply to the MPA 401-70V

When using the PS 1230 power supply with either amplifier, connect one end of the DC power cord to one of the two pole, 3.5 mm captive screw connectors on the power supply. Connect the other end into the power socket on the rear panel of the amplifier, as shown in figure 4 below. The power cord connectors are already correctly wired when shipped.

CAUTION: When the PS 1230 power supply is connected to the MPA 401, it must not be shared with any other devices.

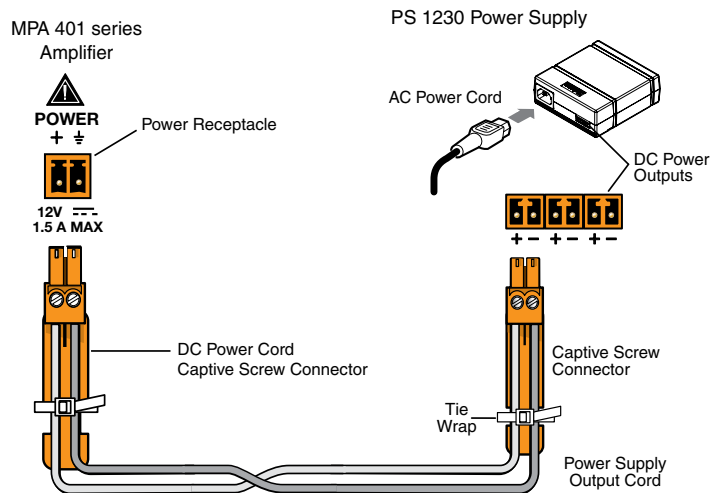
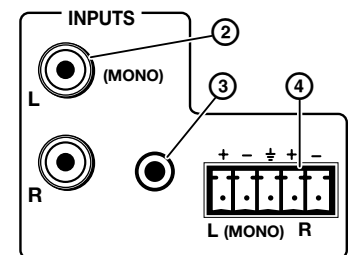


Figure 4. Connecting the PS 1230 Power Supply to an MPA 401 Amplifier

Audio Inputs

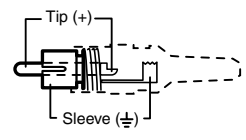
Use the rear panel connections (see figure at right) to connect audio inputs to the amplifier. Wire the connectors as shown below. The balloon numbers refer to figure 2.



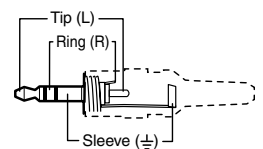
- ② **RCA input connectors** — These connectors accept unbalanced, line level audio signals. The input can be stereo (using two RCA jacks) or mono (using a single RCA jack plugged into the left/mono socket).

If unused, the connectors automatically terminate to lower the noise floor.

- ③ **3.5 mm stereo input** — This input also accepts unbalanced, line level audio signals through a 3.5 mm tip ring sleeve (TRS) stereo jack. If unused, the connector automatically terminates to lower the noise floor.

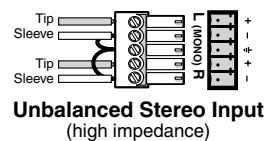


RCA Connector

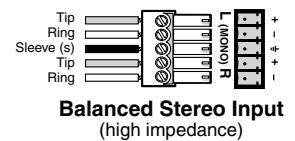


3.5 mm TRS Connector

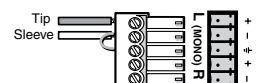
- ④ **Balanced or unbalanced audio input connector** — This 5-pole 3.5 mm captive screw connector accepts line level, balanced or unbalanced, mono or stereo audio signals. See the [notes on page 4](#) for important information about connecting wires to captive screw connectors.



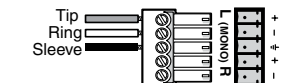
Unbalanced Stereo Input
(high impedance)



Balanced Stereo Input
(high impedance)



Unbalanced Mono Input



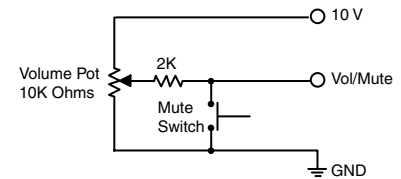
Balanced Mono Input

Remote Input Connector

- ⑤ **Remote input connector (see figure 2)** — This 3-pole captive screw connector allows the option of using a wall-mounted audio controller or MediaLink product to control volume and mute levels remotely.

Options for remote control include the Extron VC 50, VCM 100 AAP, VCM 100 MAAP, or MLA VC10. Third party 10k potentiometer volume controllers can also be connected to this port. See the [notes on page 4](#) for important information about connecting wires to captive screw connectors.

Wire the remote control connector to the VCM 100 MAAP as shown in the figure at right and instructions below:



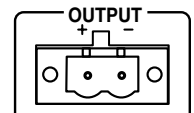
- Pin 1 is 10 VDC reference voltage.
- Pin 2 (VOL/MUTE) has two functions:
 - It can be used as a variable voltage input. The volume control DC voltage range is 0 to 10 V, with 0 V giving full attenuation and 10 V giving maximum volume.
 - It can be used for remote control muting. Sound is muted while the mute pin is shorted to ground.
- Pin 3 is ground.

NOTE: All nominal levels are at $\pm 10\%$

More information about remote control of these amplifiers can be found on [page 9](#).

Speaker Connections

- ⑥ **Speaker connection (see figure 2)** — Connect the speakers to this socket using the 2-pole, 5 mm screw-lock captive screw connector (shown at right).



The three left channel inputs (RCA, TRS and captive screw) are summed to form Left Sum, with weightings proportional to their respective sensitivities. Similarly the three right channel inputs are summed to form a Right Sum. Left Sum and Right Sum are mixed and amplified to provide one high voltage, mono output. The MPA 401-70V provides up to 40 W for a 70 V line distributed sound system; the MPA 401-100V provides up to 40 W for a 100 V line distributed sound system.

See the [notes on page 4](#) for important information about connecting wires to captive screw connectors.

CAUTION: Do not short the + and - outputs to each other or to ground (\oplus) as this will damage the amplifier.

Setup and Operation

This section provides information about the front panel features and operation of the MPA 401-70V and MPA 401-100V:

- [Front Panel Features](#)
- [Setting Input Level](#)
- [Setting Bass and Treble](#)
- [Remote Control Options](#)

Front Panel Features

The front panels of the MPA 401-70V and MPA 401-100V are identical and shown below:

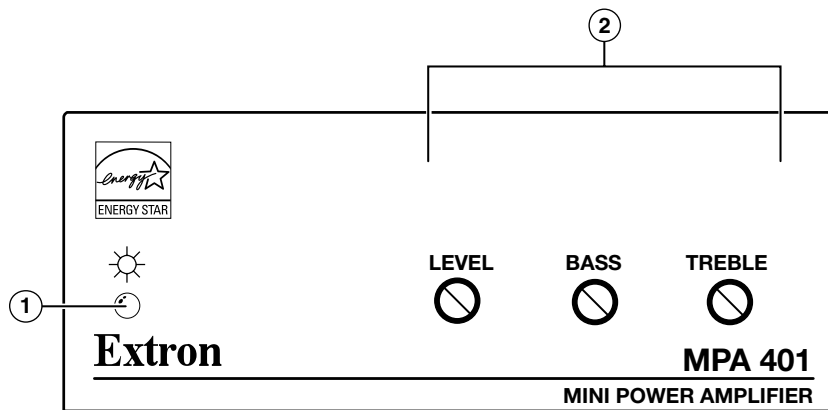


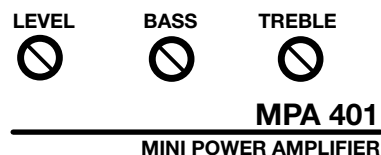
Figure 5. MPA 401-70V or MPA 401-100V Front Panel

- ① **Power LED** — The green LED is on when the MPA 401 unit is receiving power and active. It is amber when the unit is on standby.
- ② **Potentiometers** — These three front panel potentiometers are used to optimize level, bass, and treble settings (see the following pages for further details).

Setting Input Level

Adjust the input level as follows:

1. If necessary, unplug the remote plug from the unit.
2. If connecting the amplifier to a system with adjustable volume, set the volume to its lowest point. Then adjust the level potentiometer fully counterclockwise to its minimum setting.
3. Set the system volume to its maximum level. No sound should come out.
4. Slowly increase the amplifier level until sound distortion starts to occur. Lower the level slightly until the distortion disappears. This setting ensures that, whatever the system volume setting may be, no clipping occurs.



Setting Bass and Treble

Adjust the bass and treble as follows:

1. Use the bass potentiometer to increase or decrease the bass shelving ± 10 dB at 100 Hz and below.
2. Use the treble potentiometer to increase or decrease the treble shelving ± 10 dB at 10 kHz and above.

NOTE: Turning the bass or treble potentiometers counterclockwise will decrease the output at the specified frequencies. Turning the potentiometers clockwise will increase the output. When the potentiometer is at the center detent, flat response is achieved.

Remote Control Options

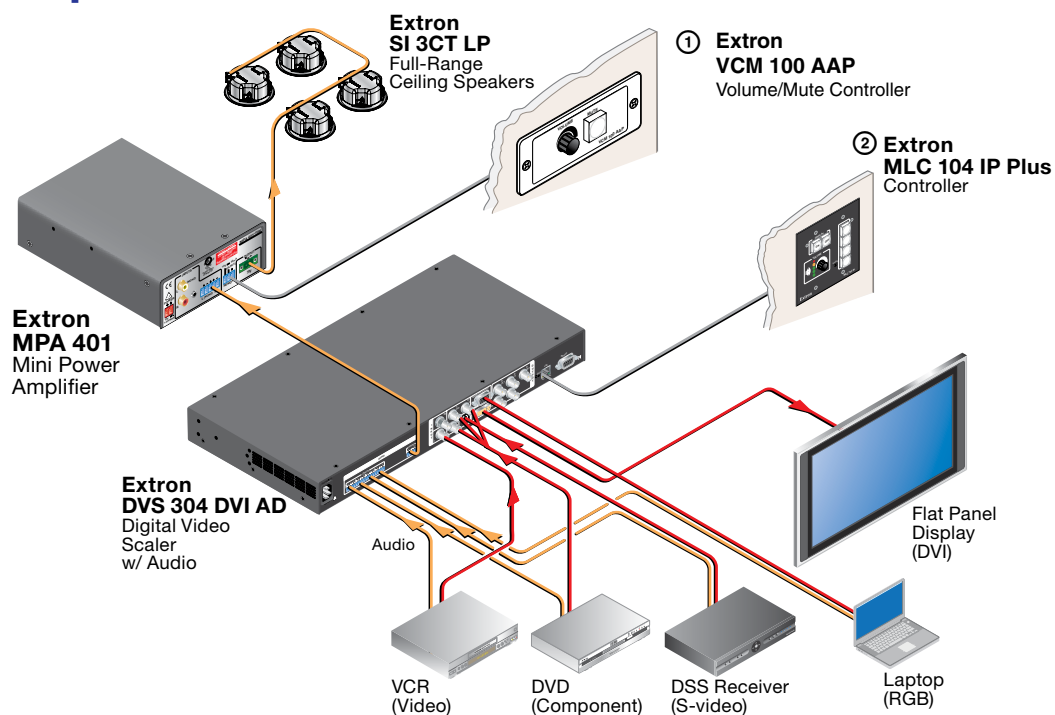


Figure 6. MPA 401 Remote Control Options

- 1. Extron VCM 100 AAP volume and mute control** — For a system designed to control the volume of the amplifier directly, use a 10k Ohm potentiometer to control volume via the remote port on the amplifier. Follow the instructions in the product guide.
- 2. Using a MediaLink™ Controller** — For a system with variable audio output, connect the audio output to the audio input of the amplifier. In the above example, a MediaLink controller adjusts the audio volume via a network connection. Follow the instructions in the product guide.

Specifications

Audio

Voltage gain	
MPA 401-70V	
RCA and TRS inputs	222x (47 dB)
Captive screw input	57x (35 dB)
MPA 401-100V	
RCA and TRS inputs	317x (50 dB)
Captive screw input	81x (38 dB)
CMRR	75 dB (typical) @ 1 kHz
Bass adjustment	±10 dB @ 100 Hz
Treble adjustment.....	±10 dB @ 10 kHz

Audio input

Number/signal type	1 stereo/mono, balanced/unbalanced input 2 stereo/mono, unbalanced inputs (The three inputs are individually buffered and mixed together. Stereo signals are actively summed into a mono signal.)
Connectors	(1) 3.5 mm captive screw connector, 5 pole (main input) (1) 3.5 mm mini audio jack (tip, ring, sleeve) 1 pair RCA
Impedance	>10k ohms balanced/unbalanced, DC coupled
Maximum level	+20 dBu (balanced, captive screw) or +4 dBV (unbalanced, RCA/TRS) at 1% THD+N
Input sensitivity	
RCA and TRS inputs	-10 dBV if driven by one input -16 dBV if both inputs are summed
Captive screw input	+4 dBu if driven by one input -2 dBu if both inputs are summed

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

Audio output

Number/signal type	
MPA 401-70V	1 single channel (mono) 70 V
MPA 401-100V	1 single channel (mono) 100 V
Connectors	(1) 5 mm screw lock captive screw connector, 2 pole
Load impedance	
MPA 401-70V	125 ohms minimum
MPA 401-100V	250 ohms minimum
Frequency response	80 Hz to 20 kHz, +1 dB/-3 dB, 1 watt
THD + Noise	<0.2% @ 1 kHz at 3 dB below clipping
S/N	>75 dB, 20 Hz to 20 kHz, unweighted
Damping factor	>100
High pass filter	80 Hz, 12 dB/octave roll off
Amplifier type	Class D

Output power	
MPA 401-70V	40 watts (rms), 70 V, 1 kHz, 1% THD
MPA 401-100V	40 watts (rms), 100 V, 1 kHz, 1% THD

Control/remote — amplifier

Control port	(1) 3.5 mm captive screw connector, 3 pole
Pin configuration	Pin 1 = +10 VDC (50 mA max.), pin 2 = volume/mute control (variable voltage), pin 3 = GND
Volume control voltage range	0 V (mute) to 10 V (maximum volume)

General

External power supply	100 VAC to 240 VAC, 50-60 Hz, external; to 12 VDC, 3 A (min.), regulated
Power input requirements	12 VDC, up to 5 A
Power consumption	For amplifier and external power supply
Typical	13 W (1/8 power, pink noise, at 125 ohms)
Quiescent	8 watts
Standby	<1 watt (triggered by contact closure or after 25 minutes [\pm 5 minutes] with no signal)
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Thermal dissipation	
Standby	<1 watt (3 BTU/hr)
Idle	6 watts (21 BTU/hr)
1/8 power, pink noise	8 watts (28 BTU/hr)
Mounting	
Rack mount	Yes, with optional 1U rack shelf or back of rack mounting kit
Furniture mount	Yes, with optional under-desk mounting kit
Pole mount	Yes, with optional pole mounting kit
Enclosure type	Metal
Enclosure dimensions	1.7" H x 4.3" W x 6.0" D (1U high, quarter rack wide) (4.3 cm H x 10.9 cm W x 15.2 cm D) (Depth excludes connectors.)
Product weight	0.6 lbs (0.3 kg)
Shipping weight	3 lbs (2 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL UL rated for use in plenum airspaces: meets UL 2043 for heat and smoke release, excluding the power supply; meets UL 60065 and IEC 60065 for AV equipment safety.
EMI/EMC	CE, C-tick, FCC Class B, ICES Class B, VCCI
Environmental	
MPA 401-70V	Complies with the appropriate requirements of CEC, ENERGY STAR® (ENERGY STAR® qualified amplifier), EU code of conduct, RoHS, WEEE
MPA 401-100V	Complies with the appropriate requirements of CEC, EU code of conduct, RoHS, WEEE
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTES: All nominal levels are at \pm 10%

Specifications are subject to change without notice.

Parts and Accessories

This section of the user guide contains information about:

- [Included Parts](#)
- [Optional Accessories](#)

Included Parts

Description	Part Number
MPA 401-70V <i>or</i> MPA 401-100V	60-845-01
EPS 1250 C External 12 VDC, 5 A power supply (MPA 401-70V) <i>or</i> PS 1230 External 36 W power supply (MPA 401-70V and MPA 401-100V)	60-845-11
IEC power cord	70-725-01
(1) 2-pole 5 mm terminal block plug	70-769-01
(1) 5-pole 3.5 mm captive screw plug	
(1) 3-pole 3.5 mm captive screw plug	
(1) 2-pole 3.5 mm power captive screw plug	
Tweezer (small screwdriver)	
<i>MPA 401-70V and MPA 401-100V Setup Guide</i>	

Optional Accessories

Description	Part Number
RSU 126 1U, 6 inch deep, universal rack kit	60-190-10
RSB 126 1U, 6 inch deep basic rack shelf	60-604-11
RSU 129 1U, 9.5 inch deep, universal rack kit	60-190-01
RSB 129 1U, 9.5 inch deep basic rack shelf	60-604-02
MBU 125 Under-desk mounting kit	70-077-01
MBD 129 Through-desk mounting kit	70-077-02
PMK 350 Pole mount kit	70-563-03
EPS 1250 C External power supply replacement kit	70-725-01
PS 1230 External 36 W power supply replacement kit	70-769-01
VC 50 Volume control wall plate	70-530-02
VCM 100 AAP Volume/mute - AAP	70-396-11
VCM 100 MAAP Volume/mute - MAAP	70-397-11
MLA-VC10 Volume control module	60-502-01
MLA VC10 Plus Volume control module	60-1090-01
SI 3CT LP Ceiling speakers	42-103-03
SI 26 CT Ceiling speakers	42-070-03
FF 120 T Ceiling speakers	42-120-13
FF 220 T Ceiling speakers	42-141-03
SPK14/1000 Non-Plenum 1000 feet (300 m) spool	22-152-03
SPK14P/1000 Plenum 1000 feet (300 m) spool	22-155-03
SPK16/1000 Non-Plenum 1000 feet (300 m) spool	22-151-03
SPK16P/1000 Plenum 1000 feet (300 m) spool	22-154-03
SPK18/1000 Non-Plenum 1000 feet (300 m) spool	22-150-03
SPK18P/1000 Plenum 1000 feet (300 m) spool	22-153-03

Mounting

This section outlines the various mounting options available for the MPA 401 series amplifiers:

- [Plenum Placement](#)
- [Tabletop Placement](#)
- [Rack Mounting](#)
- [Under-desk Mounting](#)
- [Through-desk Mounting](#)
- [Projector Mounting](#)

Plenum Placement

The MPA 401-70V and MPA 401-100V amplifiers meet UL 2043 requirements for heat and smoke release. They can be installed in the ceiling, out of sight, with reduced risk of theft.

CAUTION: Although the amplifier is plenum rated, the power supply provided with it is not. The power supply must not be placed in the plenum space. Cables to and from the amplifier must also be plenum rated.

Tabletop Placement

Attach the four provided rubber feet to the bottom of the unit and place it in any convenient location.

Rack Mounting

UL Guidelines For Rack Mounting

The following Underwriters Laboratories (UL) guidelines are relevant to the safe installation of these products in a rack:

- 1. Elevated operating ambient temperature** — If the unit is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature (T_{ma}: +122 °F, +50 °C) specified by Extron.
- 2. Reduced air flow** — Install the equipment in the rack so that the equipment gets adequate air flow for safe operation.
- 3. Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.
- 4. Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of the equipment nameplate ratings should be used when addressing this concern.
- 5. Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as the use of power strips).

CAUTION: Use only the two holes indicated in figure 7 for mounting the MPA 401. The other four holes anchor stand-offs for the internal circuit boards; using them may damage the amplifier and will not provide secure mounting for the unit.

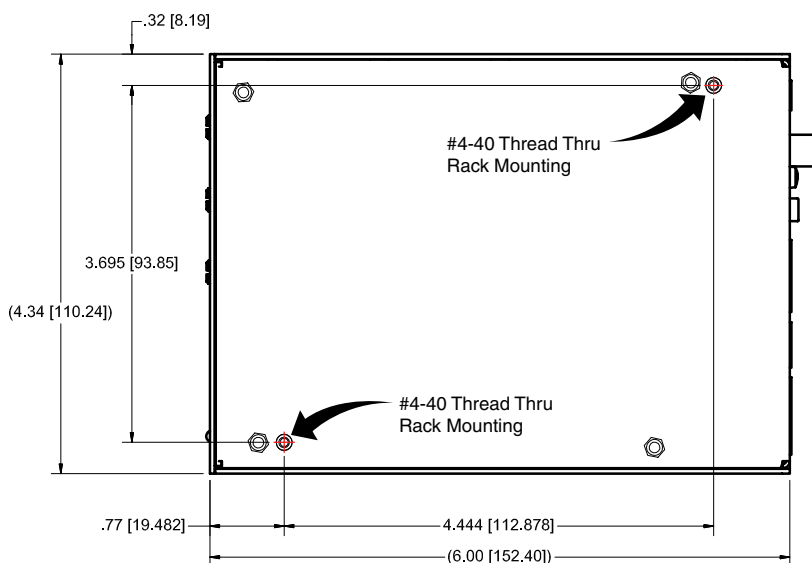


Figure 7. Points for Securing the Base of the MPA 401 to a Rack

Rack Mounting Procedure

The unit can be mounted on any of these optional Extron rack systems:

- **RSU 126:** 6 inch deep, 1U rack shelf kit (part number **60-190-10**)
- **RSB 126:** 6 inch deep, 1U basic rack shelf (part number **60-604-11**)
- **RSU 129:** 9.5 inch deep, 1U rack shelf kit (part number **60-190-01**)
- **RSB 129:** 9.5 inch deep, 1U basic rack shelf (part number **60-604-02**)

To mount the amplifier on a rack shelf, follow the instructions provided with the shelf accessories.

Under-desk Mounting

Mount the unit under a desk or podium, using the optional Extron MBU 125 under-desk mounting kit (part number **70-077-01**) by following the instructions provided with the kit.

Through-desk Mounting

Mount the unit through a desk or podium using the optional Extron MBD 129 through desk mounting kit (part number **70-077-02**) by following the instructions provided with the kit.

Projector Mounting

The amplifier can be mounted above a projector using the optional PMK 350 Pole mount kit (part number **70-563-03**). Follow the instructions provided with each kit.

Extron® Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase; touchscreen display and overlay components are covered for 1 year. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,
and Central America:**

Extron Electronics
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:

Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe, Africa, and the Middle East:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:

Extron Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:

Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or modifications made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: (714) 491-1500

Asia: +65.6383.4400

Europe: +31.33.453.4040

Japan: +81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron USA - West Headquarters +800.633.9876 Inside USA/Canada Only +1.714.491.1500 +1.714.491.1517 FAX	Extron USA - East +800.633.9876 Inside USA/Canada Only +1.919.863.1794 +1.919.863.1797 FAX	Extron Europe +800.3987.6673 Inside Europe Only +31.33.453.4040 +31.33.453.4050 FAX	Extron Asia +800.7339.8766 Inside Asia Only +65.6383.4400 +65.6383.4664 FAX	Extron Japan +81.3.3511.7655 +81.3.3511.7656 FAX	Extron China +400.883.1568 Inside China Only +86.21.3760.1568 +86.21.3760.1566 FAX	Extron Middle East +971.4.2991800 +971.4.2991880 FAX
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